

Table S1. Indexing of $\text{MnC}_2\text{O}_4 \cdot 2\text{H}_2\text{O}$ (NC series) in α' and α'' settings (C2/c space group).

d exp., Å for $\text{MnC}_2\text{O}_4 \cdot 2\text{H}_2\text{O}$ (NC series, our data)	α' setting, sp. gr. C2/c, $a = 11.999\text{\AA}$, b $= 5.642\text{\AA}$, $c = 9.974\text{\AA}$, $\beta = 128.34^\circ$ *			α'' setting, sp. gr. C2/c, $a = 11.999\text{\AA}$, $b = 5.640\text{\AA}$, $c =$ 9.734\AA , $\beta =$ 126.55° *			d exp., Å for lindbergite [5]
	h	k	l	h	k	l	
4.809	-2	0	2	2	0	0	4.813
4.697	2	0	0	-2	0	2	4.704
3.911	0	0	2	0	0	2	3.909
3.673	-1	1	2	1	1	1	3.663
3.631	1	1	1	-1	1	2	3.626
2.997	-4	0	2	-4	0	2	2.998
2.821	0	2	0	0	2	0	2.816
2.682	-1	1	3	1	1	2	2.678
2.654	1	1	2	-1	1	3	2.654
	0	2	1	0	2	1	
2.408	-4	0	4	4	0	0	
2.371	2	0	2	-2	0	4	2.370
2.352	4	0	0	-4	0	4	2.352
2.287	0	2	2	0	2	2	2.285
1.996	-4	2	3	-4	2	1	1.993
1.949	-6	0	4	-6	0	2	1.947
1.925	-6	0	2	-6	0	4	1.925
1.845	-1	3	1	1	3	0	1.843
	1	3	0	-1	3	1	
1.824	-5	1	5	-3	1	5	
				5	1	0	
1.499	-8	0	4	-8	0	4	
1.373	-1	1	6	1	1	5	
	-2	4	1	-2	4	1	
	6	2	0	-6	2	6	

* Unit cell parameters of $\text{MnC}_2\text{O}_4 \cdot 2\text{H}_2\text{O}$, NC series, our data

Table S2. Indexing of $\text{MgC}_2\text{O}_4 \cdot 2\text{H}_2\text{O}$ (NC series) in $C2/c$ and $Fddd$ space groups.

d exp., Å for $\text{MgC}_2\text{O}_4 \cdot 2\text{H}_2\text{O}$ (NC series, our data)	Sp. gr. $C2/c$, $a =$ 12.695Å , $b = 5.390\text{Å}$, $c = 9.983\text{Å}$, $\beta =$ 129.47° *			Sp. gr. $Fddd$, $a =$ 12.698Å , $b =$ 5.390Å , $c =$ 15.413° **			d exp., Å for glushinskite [3]
	h	k	l	h	k	l	
4.894	2	0	0	2	0	2	4.89
	2	0	-2				
4.717	1	1	0	1	1	1	
	1	-1	-1				
3.850	0	0	2	0	0	4	3.849
3.251	3	-1	-1	3	1	1	
	3	-1	-2				
3.174	4	0	-2	4	0	0	3.179
2.544	0	2	1	0	2	2	2.541
2.481	2	-2	1	2	2	0	2.492
2.449	4	0	0	4	0	4	
	4	0	-4				
2.381	2	0	2	2	0	6	2.379
	2	0	-4				
2.086	2	2	1	2	2	4	2.086
	2	-2	-3				
2.041	6	0	-2	6	0	2	2.039
	6	0	-4				
1.859	0	2	3	0	2	6	1.861
1.767	1	3	0	1	3	1	
	1	-3	-1				
1.643	3	-3	-1	3	3	1	
	3	-3	-2				
1.604	4	2	1	4	2	6	
	4	-2	-5				
1.588	8	0	-4	8	0	0	
1.528	6	-2	-1	6	2	4	1.526
	6	-2	-5				
1.461	5	-3	-2	5	3	1	
	5	-3	-3				
1.348	0	4	0	0	4	0	

* Unit cell parameters of $\text{MgC}_2\text{O}_4 \cdot 2\text{H}_2\text{O}$, NC series, our data** $a_{\text{orth}} = a_{\text{mon}}$, $b_{\text{orth}} = b_{\text{mon}}$, $c_{\text{orth}} = 2c_{\text{mon}} * \cos(\beta_{\text{mon}} - 90^\circ)$

Table S3. Chemical composition of crystals of lindbergite – glushinskite solid solution series at various Mg/(Mg+Mn) ratios in solution by EDX.

Mg% in solution	Mg/(Mg+Mn) % in crystals, average	Standard deviation of Mg/(Mg+Mn) % in crystals	Mg% in solution	Mg/(Mg+Mn) % in crystals	Standard deviation of Mg/(Mg+Mn)% in crystals
S series			N series		
0.0	0.0	0.0	0.0	0.0	0.0
10.0	9.7	6.1	10.0	19.3	6.5
20.0	17.8	5.0	20.0	25.8	7.2
30.0	32.0	2.3	30.0	45.8	5.1
40.0	38.3	9.4	40.0	53.1	9.6
50.0	70.7	12.2	50.0	70.0	0.6
60.0	85.2	7.9	60.0	82.4	4.0
65.0	83.0	8.4	65.0	77.6	19.8
70.0	79.9	12.4	70.0	86.7	5.3
75.0	78.2	5.6	75.0	87.8	1.3
80.0	87.6	6.5	80.0	93.1	3.0
85.0	90.9	1.7			
90.0	86.0	8.9	90.0	96.0	1.4
100.0	100.0	0.0	100.0	100.0	0.0
SC series			NC series		
0.0	0.0	0.0	0.0	0.0	0
10.0	15.4	1.3	10.0	21.3	3.9
20.0	26.7	5.5	20.0	25.8	6.0
30.0	31.0	8.7	30.0	33.0	4.4
40.0	50.8	7.6	40.0	39.1	6.9
50.0	61.1	4.4	50.0	54.8	2.8
60.0	69.0	5.0	60.0	66.1	17.5
70.0	79.0	3.3	70.0	80.2	5.1
75.0	64.8	8.0			
80.0	79.9	6.7	80.0	87.8	5.2
90.0	89.4	0.8	90.0	85.3	14.4
100.0	100.0	0.0	100.0	100.0	0.0